

ROLE OF KEGEL'S EXERCISE ON POSTPARTUM PERINEAL FITNESS: RANDOMISED CONTROL TRIAL

ROLUL EXERCIȚIILOR KEGEL ÎN FITNESUL PERINEAL POSTPARTUM: STUDIU RANDOMIZAT

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Key words: Kegel's exercise, Modified Oxford grading scale, perineal strength & endurance.

Cuvinte cheie: exerciții Kegel, Scala Oxford Modificată, forță perineală & duranță.

Abstract. Objectives: To assess the effect of Kegel's exercise on perineal muscle strength and endurance of postnatal mothers after vaginal delivery.

Study Design: Randomised Control Trial

Study setting: Department of Cardiorespiratory Physiotherapy, Pravara Rural Hospital, Loni-413736, District- Ahmednagar, Tal-Rahata, Maharashtra State, India. **Participants:** 100 Participants between 20-40 age group who had vaginal delivery with < 2 grade for muscle strength on modified grading scale as measured by per vaginal digital examination.

Intervention. Participants were divided into two groups. Both of the groups were given routine exercise in common and the Interventional group was given Kegel's exercise in addition. The perineal muscle strength and endurance was measured pre and post 12 weeks of intervention according to modified Oxford Grading Scale and objective assessment of Quality of life(QOL) was taken.

Outcome measures : The outcome measure was perineal muscle strength and endurance and objective assessment on quality of life (QOL) was also done. **Results:** Comparison of these scores between the groups by unpaired t-test yielded p-value of < 0.01 suggesting highly significant difference in the Interventional group.

Conclusion: The Kegel's exercise is effective to increase the perineal fitness and also improves the QOL.

Rezumat. Obiective. Lucrarea își propune să evalueze efectul exercițiilor Kegel asupra forței și duranței musculaturii pelviperineale la lăuze, după naștere vaginală.

Designul cercetării. Studiu randomizat

Organizarea studiului: Departamentul de Kinetoterapie Cardio-respiratorie, Spitalul Municipal Pravara, Loni-413736, Districtul-Ahmednagar, Tal-Rahata, statul Maharashtra, India. **Participanți:** 100 lăuze cu vârste între 20-40 ani, după naștere vaginală, cu < 2 grade de forță a musculaturii perineale, măsurată cu pelviperineometru digital.

Intervenție. Lăuzele au fost împărțite în două grupe. Ambele au urmat exerciții de rutină, iar grupul experimental a efectuat în plus exerciții Kegel. Forța și duranța musculaturii perineale s-a măsurat pre și post intervenție (12 săptămâni de program) și la evaluare s-au folosit Scala Oxford Modificată și Scala de evaluare a calității vieții. **Rezultate.** S-a evaluat forța și duranța musculaturii perineale, precum și calitatea vieții.

Compararea scorurilor inițiale și finale cu ajutorul testului t pentru eșantioane perechi a demonstrat existența unei diferențe semnificative p-< 0.01, între cele două, în cadrul grupului experimental.

Concluzii. Exercițiile Kegel sunt eficiente în creșterea fitness-ului perineal și ajută la îmbunătățirea calității vieții.

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Introduction

The pelvic floor makes up a significant piece of your body's core, the essence of well being. It supports the bones in the spine, structures the abdominal cavity -muscles and organs included, controls the passage of urine and stool, facilitates the childbirth process and contributes to a woman's sexual pleasure and ability to reach orgasm.[1] There is good evidence that vaginal delivery can be associated with damage to the innervations of the pelvic floor as well as direct trauma to levator ani muscle and endo-pelvic fascia.[2] It has been reported that there is a decline in perineal muscle strength from the 20th gestational week to 6 weeks postpartum that may interfere with perineal muscle function.[3]

About a third of women have urine leakage and up to a tenth of women leak stool (faeces) after child birth. It has been studied that prevalence of urinary incontinence increase during pregnancy and decreases following delivery although postpartum prevalence still remain higher than before pregnancy.[4] Stress urinary incontinence is an important health issue affecting up to 24% of postpartum women.[5] Faecal incontinence is less common than urinary incontinence but is particularly distressing psychologically and physically.[4] Maintaining the tone of pelvic floor muscle (PFM) not only help to control the passage of urine from urethra but also help control the passage of stool from the rectum. Dr. Arnold Kegel in 1940 discovered, the squeeze and hold vaginal exercises known as Kegel's were specifically designed to target pelvic floor strengthening.[1] Kegel reported that 84% of his patients with urinary incontinence were cured after doing PFM exercises.[6] Essentially, Kegel's exercise may be prescribed to increase strength (the maximum force generated by a muscle in a single contraction), endurance (ability to contract repetitively, or to sustain a single contraction over time), coordinate muscle activity (such as the pre-contraction of pelvic floor muscles prior to a rise in intra-abdominal pressure, or to suppress urgency) address a combination of these.[4] Although some 60 years have passed this practiced was introduced, the effect of such exercise have until recently been only sparsely documented.[7]

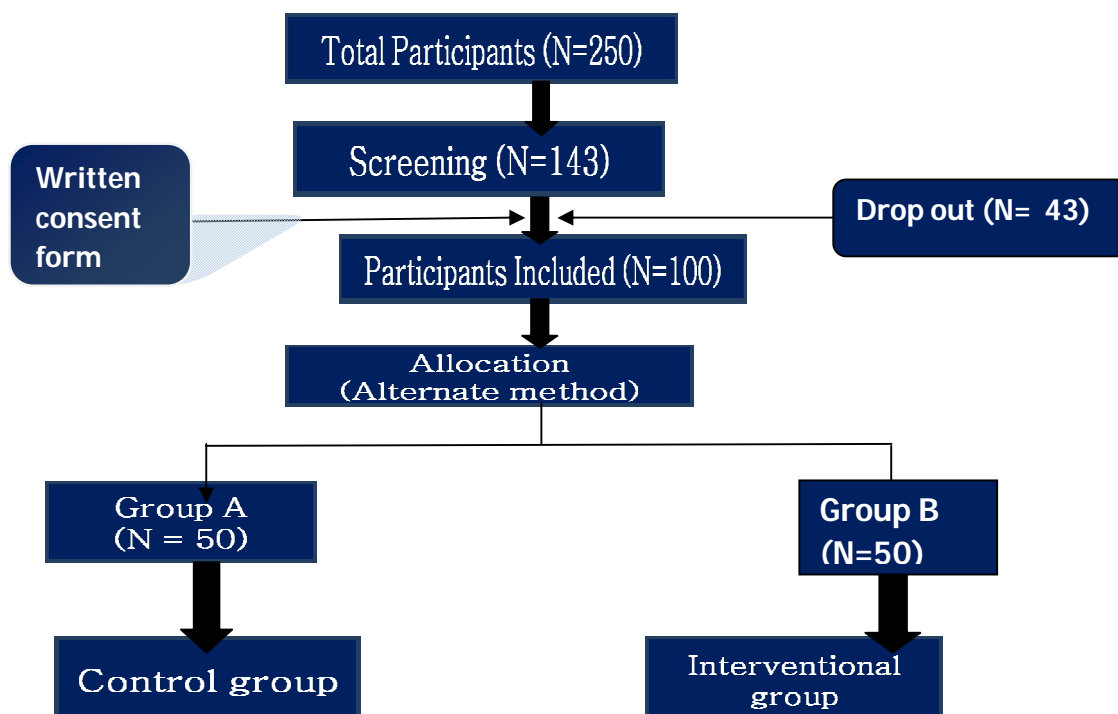
Method

Participants. The study received approval from Ethical Committee of Pravara Institute of Medical Sciences, Loni. Total 200 postnatal primi gravidae mothers between 20 and 30 years who had vaginal delivery with < 2 grade for muscle strength on modified grading scale as measured by per vaginal digital examination who visited the outpatient Department of Obstetrics and Gynecology, Department of Physiotherapy of Pravara Rural Hospital were included for this study. Participants with multiparous delivery, with any previous abdominal or urogenital surgeries, on any hormonal therapy were excluded from the study. Written informed consent was taken from all the participants. A brief explanation about the procedure was given to all the participants. Data collection for this study was 12 weeks conducted during October-December 2012

Outcome measures

1. Perineal muscle strength
2. Perineal muscle endurance
3. Objective assessment of Quality of Life (QOL)

Procedure



Hundred participants were randomly divided into control group (N=50) and interventional group (N=50) based upon the inclusion and exclusion criteria. Control group was given routine exercises with counseling. Routine exercise like upper abdominal strengthening exercises (like curl Ups) and lower abdominal strengthening exercises, pelvic tilting exercises were given. And for interventional group, Kegel's exercise along with routine exercises was given. Both group participants were instructed to perform the exercise at home once they were explained about it. The outcome variables measured before and after the study were strength and endurance and were assessed according to Modified Oxford Grading Scale for both the groups.[8] and the objective assessment of QOL was taken. Participants were positioned in supine with their head on two pillows. The hips were flexed and abducted, and the knees bent.

The strength was examined using the index finger placed approximately 4 cm to 6 cm inside the vagina and positioned at 4 o'clock and 8 o'clock to monitor muscle activity. Moderate pressure was applied over the muscle bulk to assist in the initiation of the appropriate muscle contraction. Endurance was assessed by counting the time upto which pelvic muscle can hold the finger.[8]

Kegel's exercises: Participants in interventional group were trained for Kegel's exercise (or PFM exercise). Participants were explained as if they are trying to stop themselves from passing urine from the bladder, gas or stool from the bowel squeeze and hold the contraction for 6 seconds and relax for 10 seconds before starting the next. Start with the 10 contractions for three times each morning, afternoon, night, this session will last for 5 minutes each time at 1st week. Gradually increase to 20 contractions with increase in duration upto 20 minutes at 6th week. On 11th and 12th week exercises are performed for 45mins with 30-50 contractions in each time. Kegel's exercise was performed at home in lying, sitting, kneeling, and standing with legs apart to emphasis strength training of pelvic floor and relaxation of other muscles.[8]

Follow up assessment of strength and endurance was taken every 3rd weeks for twelve weeks of treatment for both the groups. Strength and endurance were measured on the day of assessment and on 12th week. Objective assessment of QOL was done before and after the intervention for both the groups. The baseline data and the data obtained on the final day of treatment were used for statistical analysis.

Results

The data was analyzed by comparison of both the groups for mean, standard deviation, unpaired student “t” test by using scientific statistics Graph Pad software. The mean perineal muscle strength and endurance assessment scores noted before the intervention and post intervention assessments for both the groups (Table No.1 and Table No. 2)

Table No.1: Pre- Intervention Data

| | Mean | Standard deviation | p Value | t Value |
|-----------|-------|--------------------|---------|---------|
| Group- I | 2.627 | 0.159 | 0.001 | 15.866 |
| Group- II | 2.705 | 0.181 | 0.001 | 15.996 |

Graph 1:

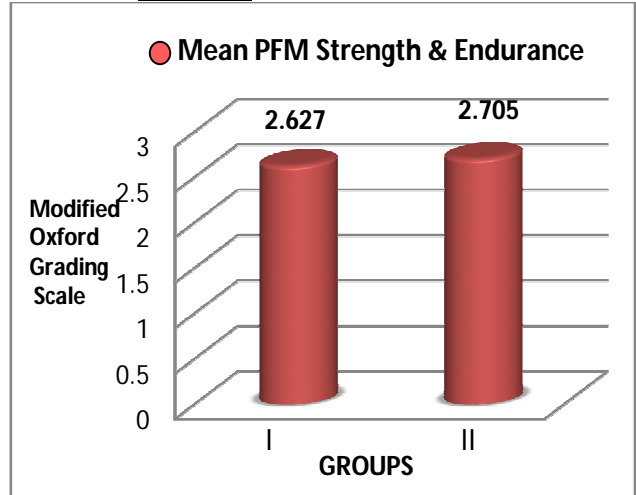
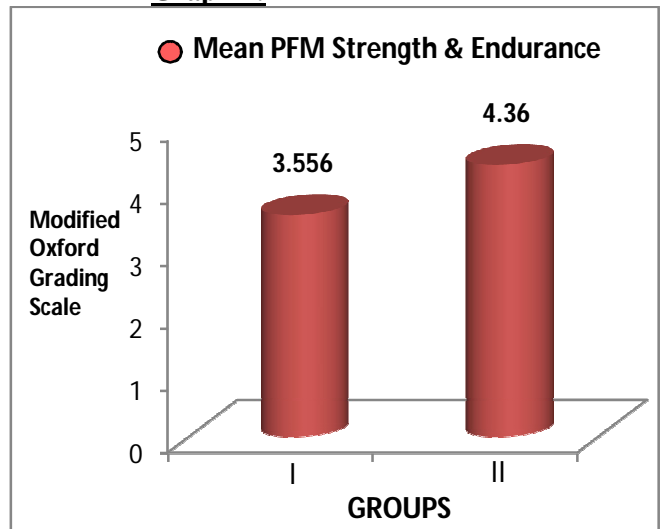


Table No.2: Post Intervention

| | Mean | Standard Deviation | p Value | t Value |
|----------|------|--------------------|---------|---------|
| Group-I | 3.55 | 0.130 | 0.001 | 32.98 |
| Group-II | 4.36 | 0.186 | 0.001 | 36.46 |

Graph 2:



Comparison of these scores between the groups by unpaired t-test yielded p-value of < 0.001 suggesting highly significant difference in Group II (i.e. interventional group) than the control group post intervention (Graph 2). Objective assessment for QOL was also improved post intervention in Group II.

Discussion

this study, the group receiving Kegel’s exercise with abdominal exercise significantly improved muscle strength and endurance when compared to the control group with abdominal exercises and counseling.

The Kegel's exercise performed in this study emphasized performing fewer repetitions daily, gradually increasing the intensity and force of contraction time for the recruitment of more motor units. This conduct is important to gain muscle strength.[9] Thus, the training programs of

Pelvic Floor can cause muscle changes due to neural adaptation during the first six to eight weeks.[10]

This study linked the contraction of transverses abdominals in order to intensify the action of PFM. Another study showed that, with the relaxation of the transverse muscle of the abdomen, there is a decrease in electromyographic activity of the PFM and that with the contraction of this muscle, there is a co activation of PFM.[11] There are strong evidence to suggest that for women with stress, urge and mixed incontinence PFMT is better than no treatment.[12] Perineal trauma has been identified as a risk factor for developing UI, and it has been suggested that women affected by second-, third or fourth-degree tears should be targeted on the ward and motivated to commence and adhere to a Kegel's exercise. Unfortunately, in spite of the significance of restoring PFM function and strength following trauma, studies have reported that only between 20% and 50% of postnatal women perform daily PFM.[13] Several studies have proved the effectiveness of strengthening the pelvic floor muscles and others have shown that these exercises in association with biofeedback are safe and effective.[14] Being physically fit can have several advantages in speeding your recovery after giving birth. The Kegel's exercise training has no negative side effects and is inexpensive and it helps women to take care of their own health by themselves. [7]

There are studies which support the importance of PFM passive force or tone in the maintenance of continence as well as the rationale that PFM training improves PFM passive force and may facilitate more effective automatic motor-unit firing of the PFM, thus preventing PFM descent during increased intra-abdominal pressure, which in turn prevents urine leakage. Local muscular endurance has been shown to improve when the individual performs high repetition exercise sets (i.e. long-duration sets in which the muscle is subject to low-resistance tension and high time-under-tension) and/or minimizes the rest period between the sets. Neither of these techniques was used as part of the study's exercise programs; instead, the study used maximum-tension strengthening exercises with short duration sets followed by a good rest period between the sets. Although a relationship exists, to a certain extent, between increased strength and local muscular endurance, specificity in training has been shown to produce the greatest improvement. [5]

Previously trained muscle has a greater strength reserve. Continuing to do Kegel exercises regularly after giving birth not only helps to maintain bladder control, but also improves muscle tone of vagina, making postpartum sex more enjoyable.

Conclusion

According to the result of the presented review Kegel's exercise postpartum is effective to increase perineal fitness and also improves the Quality of Life of the postnatal mothers hence, should be included as a part of routine postnatal care.

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